Claims

What is claimed is:

1. An apparatus for determining an antiseptic laser dose, the apparatus comprising:
   a) an adjustable laser source for generating a laser output;
   b) means for holding a target in a path of the laser output; and
   c) means for measuring a laser power from the adjustable laser source,
   wherein the antiseptic laser dose is determined by ablation of exposed pathogens within the target.

2. The apparatus of claim 1, wherein the adjustable laser source comprises a pulsed laser for generating pulsed laser light having a wavelength in a range of 580 to 1800 nanometers.

3. The apparatus of claim 2, wherein the pulsed laser is a Nd:YAG laser.

4. The apparatus of claim 3, wherein the adjustable laser source comprises an optical fiber configured deliver the laser output to the target with an exposure area in a range of 1.0 to 9 mm^2.

5. The apparatus of claim 1, wherein the adjustable laser source comprises means for controlling a distance between the laser output and the target.

6. The apparatus of claim 5, wherein the means for controlling the distance between the laser output and the target comprises a stepper-motor unit.

7. The apparatus of claim 1, further comprising means for measuring the ablation of the exposed pathogens.

8. The apparatus of claim 7, wherein the means for measuring the ablation of the exposed pathogens comprises an optical microscope.

9. The apparatus of claim 8, wherein the optical microscope is configured to optically measure a percentage of the exposed pathogens that are ablated in an area of the target.

10. The apparatus of claim 1, wherein the means for measuring the laser power from the adjustable laser source comprises a power meter.

11. The apparatus of claim 10, further comprising a means for holding the target between the path of the laser output and the power meter.

12. The apparatus of claim 1, further comprising means for determining a therapeutic radiation for treating a periodontal tissue hosting the pathogen.

13. A method of determining a damage threshold for delivering an antiseptic dose to a pathogen in a target, the method comprising:

a. measuring a pulsed laser output from a laser source;

b. irradiating the target with the pulsed laser output, wherein the target comprises the pathogen;

c. examining the pathogen for ablation;

d. adjusting the pulsed laser output; and

e. repeating steps (a) through (d) to determine the ablation threshold of the pathogen within the target.

14. The method of claim 13, wherein adjusting the pulsed laser output comprises controlling a distance between a firing end of the laser source and a surface of the target.

15. The method of claim 13, wherein the pulsed laser output is delivered at a repetition rate corresponding to a photo-acoustic of the target.

16. The method of claim 13, further comprising calculating a therapeutic ratio for treating a periodontal tissue comprising the pathogen.

17. The method of claim 16, further comprising selecting a treatment protocol for treating periodontal tissues that host the pathogen based on the therapeutic ratio.

18. The method of claim 13, wherein the pulsed laser output corresponds to a wavelength in a range of 580 to 1800 nanometers.

19. The method of claim 13, wherein irradiating the target with the pulsed laser output comprises exposing the target through an optical fiber.

20. The method of claim 13, wherein examining the pathogen for ablation comprises scanning an exposed region of the target with an optical scanning means.

21. A system for eradicating bacteria colonized within periodontal tissue, the system comprising a detachable endo-probe configured to deliver pulsed laser radiation having a wavelength in a range of 580 to 1800 nanometers to the periodontal tissue, wherein the endo-probe comprises a means for measuring depths of periodontal pockets in the periodontal tissue.